

What is claimed is:

1. A method of using high density metal oxide fillers in rubber compounds, comprising the steps of:

5 (a) selecting a high density metal oxide filler according to its specific performance properties, and

(b) introducing the filler into a rubber elastomer for subsequent vulcanization of such rubber compound.

10 2. The method of Claim 1 wherein the metal oxide fillers have a density of greater than  $5.7 \text{ g/cm}^3$ .

3. The method of Claim 1, wherein the metal oxide filler is selected from the group consisting of  $M_n(O)_{2n}$ ,  $M_n(O)_{3n/2}$ ,  $(M_1)_n(M_2)_n(O)_{2n}$ , and  
15 combinations thereof, where M is a metal selected from Groups IVA, VA, IB, VIB, VIIB and VIIIB metals (with  $M_1$  being different from  $M_2$ ), O is oxygen, and n is the valence of the metal.

20 4. The method of Claim 1, wherein the metal oxide filler is selected from the group consisting of bismuth oxides, phosphorous oxides, tin oxides, copper oxides, iron/manganese tungsten oxides, and combinations thereof.

5. The method of Claim 2, wherein the metal oxide filler is bismuth trioxide.

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6. A rubber compound, comprising:

at least one elastomer containing a natural or synthetic rubber, and  
at least one high density metal oxide filler.

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7. The rubber compound of Claim 6 wherein the elastomer is a blend of natural rubbers, synthetic rubbers, or a combination of natural and synthetic rubbers.

5            8. The rubber compound of Claim 7, wherein the elastomer is selected from the group consisting of Natural Rubber, Polyisoprene Rubber, Styrene Butadiene Rubber, Polybutadiene Rubber, (Halo)Butyl Rubbers, Ethylene Propylene Rubbers, Crosslinked Polyethylene Rubbers, Neoprene Rubbers, Nitrile Rubbers, Chlorinated Polyethylene Rubbers, Silicone Rubbers and  
10 combinations thereof.

9. The rubber compound of Claim 6 wherein the metal oxide filler has a density of greater than  $5.7 \text{ g/cm}^3$ .

15            10. The rubber compound of Claim 6 wherein the metal oxide filler is selected from the group consisting of  $M_n(O)_{2n}$ ,  $M_n(O)_{3n/2}$ ,  $(M_1)_n(M_2)_n(O)_{2n}$ , and combinations thereof, and wherein M is a metal selected from Groups IVA, VA, IB, VIB, VIIB and VIIIB metals (where  $M_1$  and  $M_2$  are different metals); O is oxygen; and n is the valence of the metal.  
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11. The rubber compound of Claim 6 wherein the amount of metal oxide within the rubber compound ranges from about 1 to about 150 phr.

12. The rubber compound of Claim 10 wherein the amount of metal oxide within the rubber compound ranges from about 5 to about 80 phr.

13. The rubber compound of Claim 10, wherein the high density metal oxide filler has a density of greater than about  $8 \text{ g/cm}^3$ .

30            14. The rubber compound of Claim 12, wherein the high density metal oxide filler is bismuth trioxide.

15. A vehicle tire component made from the rubber compound of Claim 6.

5 16. The vehicle tire component of Claim 15, wherein the tire component is a tire tread, a tire sidewall, or a tire bead filler.

17. A vehicle tire comprising at least one vehicle tire component of Claim 15.

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Sub A 13 > 18. A method of preparing the rubber compound of Claim 6, comprising the step of mixing at least one natural or synthetic rubber with at least one high density metal oxide filler.

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19. The method of Claim 18 wherein the metal oxide filler is selected from the group consisting of  $M_n(O)_{2n}$ ,  $M_n(O)_{3n/2}$ ,  $(M_1)_n(M_2)_n(O)_{2n}$ , and combinations thereof, and wherein M is a metal selected from Groups IVA, VA, IB, VIB, VIIB and VIIIB metals (where  $M_1$  and  $M_2$  are different metals); O is oxygen; and n is the valence of the metal.

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Sub A 4 > 20. The method of Claim 19 wherein the high density metal oxide is bismuth trioxide.